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CLAIMS

The subject matter claimed is:

1. The plasmid pWKK-500.

2. The plasmid pWKK-700.

3. The plasmid pWKK-800.

4. The plasmid pWKK-900.

5. The plasmid pWKK-21.

6. A plasmid encoding an anti-HIV therapeutic agent comprising a fusion protein, wherein the fusion protein comprises a DP178 peptide as a targeting moiety and a ricin A chain as a polypeptide toxin, wherein the plasmid is a member selected from the group consisting of pWKK-500, pWKK-501, pWKK-502, pWKK-503, pWKK-504, pWKK-505, pWKK-506, pWKK-507, pWKK-508, pWKK-509, pWKK-510, pWKK-511, pWKK-512, pWKK-513, pWKK-514, pWKK-515, pWKK-516, pWKK-517, pWKK-518, pWKK-519, and pWKK-520.

7. A plasmid encoding an anti-HIV therapeutic agent comprising a fusion protein, wherein the fusion protein comprises a RANTES peptide as a targeting moiety and a ricin A chain as a polypeptide toxin, wherein the plasmid is a member selected from the group consisting

of pWKK-700, pWKK-701, pWKK-702, pWKK-703, pWKK-704, pWKK-705, pWKK-706, pWKK-707, pWKK-708, pWKK-709, pWKK-710, pWKK-711, pWKK-712, pWKK-713, pWKK-714, pWKK-715, pWKK-716, pWKK-717, pWKK-718, pWKK-719, pWKK-720, pWKK-721, and pWKK-722.

8. A plasmid encoding an anti-HIV therapeutic agent comprising a fusion protein, wherein the fusion protein comprises an SDF-1 peptide as a targeting moiety and a ricin A chain as a polypeptide toxin, wherein the plasmid is a member selected from the group consisting of pWKK-800, pWKK-801, pWKK-802, pWKK-803, pWKK-804, pWKK-805, pWKK-806, pWKK-807, pWKK-808, pWKK-809, pWKK-810, pWKK-811, pWKK-812, pWKK-813, pWKK-814, pWKK-815, pWKK-816, pWKK-817, pWKK-818, pWKK-819, pWKK-820, and pWKK-821.

9. A plasmid encoding an anti-anthrax therapeutic agent comprising a fusion protein, wherein the fusion protein comprises a DP178 peptide as a targeting moiety and a ricin A chain as a polypeptide toxin, wherein the plasmid is a member selected from the group consisting of pWKK-900, pWKK-901, pWKK-902, pWKK-903, pWKK-904, pWKK-905, pWKK-906, pWKK-907, pWKK-908, pWKK-909, pWKK-910, pWKK-911, pWKK-912, pWKK-913, pWKK-914, pWKK-915, pWKK-916, pWKK-917, pWKK-918, pWKK-919, and pWKK-920.

10. A plasmid encoding an anti-HIV therapeutic agent comprising a fusion protein, wherein the fusion protein comprises a ricin A chain as a polypeptide toxin and a one-domain

ricin B chain as a cell-binding moiety, wherein the plasmid is a member selected from the group consisting of pWKK-21, pWKK-21a, pWKK-21b, pWKK-21c, and pWKK-21d.

11. An oligonucleotide encoding an HIV protease-cleavable peptide linker, wherein the oligonucleotide is represented by SEQ ID NO:36.

12. A nucleic acid encoding an HIV protease-cleavable peptide linker, wherein the nucleic acid is made by annealing oligonucleotides represented by SEQ ID NO:18 and SEQ ID NO:19.

13. A plasmid encoding an anti-HIV therapeutic agent comprising a fusion protein, wherein the fusion protein comprises a DP178 peptide as a targeting moiety and a ricin A chain as a polypeptide toxin, wherein the plasmid is made by a method comprising providing plasmid pWKK-500 and then:

(a) performing any one derivation selected from the group consisting of derivations 501 through 518; and

(b) performing either derivation 519 or derivation 520.

14. A plasmid encoding an anti-HIV therapeutic agent comprising a fusion protein, wherein the fusion protein comprises a DP178 peptide as a targeting moiety and a ricin A chain as a polypeptide toxin, wherein the plasmid is made by a method comprising providing plasmid pWKK-500 and then performing two or more derivations selected from the group consisting of:

(a) derivation 501;

(b) derivation 502 or 504 or 510;

(c) derivation 505, with the proviso that derivation 501 is omitted;

(d) derivation 506; and

(e) derivation 519 or 520.

15. A plasmid encoding an anti-HIV therapeutic agent comprising a fusion protein, wherein the fusion protein comprises a RANTES peptide as a targeting moiety and a ricin A chain as a polypeptide toxin, wherein the plasmid is made by a method comprising providing plasmid pWKK-700 and then performing two or more derivations selected from the group consisting of:

(a) any one derivation selected from the group consisting of derivations 701 through 718;

(b) derivation 721; and

(c) derivation 719 or 720 or 722, with the proviso that derivation 721 does not precede derivation 722.

16. A plasmid encoding an anti-HIV therapeutic agent comprising a fusion protein, wherein the fusion protein comprises a RANTES peptide as a targeting moiety and a ricin A chain as a polypeptide toxin, wherein the plasmid is made by a method comprising providing plasmid pWKK-700 and then performing two or more derivations selected from the group consisting of:

(a) derivation 701;

(b) derivation 702 or 704 or 710;

(c) derivation 705, with the proviso that derivation 701 is omitted;

(d) derivation 706;

(e) derivation 719 or 720 or 722, with the proviso that derivation 721 does not precede derivation 722; and

(f) derivation 721.

17. A plasmid encoding an anti-HIV therapeutic agent comprising a fusion protein, wherein the fusion protein comprises an SDF-1 peptide as a targeting moiety and a ricin A chain as a polypeptide toxin, wherein the plasmid is made by a method comprising providing plasmid pWKK-800 and then performing two or more derivations selected from the group consisting of:

(a) any one derivation selected from the group consisting of derivations 801 through 818;

(b) derivation 821; and

(c) derivation 819 or 820.

18. A plasmid encoding an anti-HIV therapeutic agent comprising a fusion protein, wherein the fusion protein comprises an SDF-1 peptide as a targeting moiety and a ricin A chain as a polypeptide toxin, wherein the plasmid is made by a method comprising providing plasmid pWKK-800 and then performing two or more derivations selected from the group consisting of:

(a) derivation 801;

(b) derivation 802 or 804 or 810;

(c) derivation 805, with the proviso that derivation 801 is omitted;

(d) derivation 806;

(e) derivation 819 or 820; and

(f) derivation 821.

19. A plasmid encoding an anti-HIV therapeutic agent comprising a fusion protein, wherein the fusion protein comprises a DP178 peptide as a targeting moiety and a ricin A chain as a polypeptide toxin, wherein the plasmid is make by a method comprising providing plasmid pWKK-21 and then:

(a) performing derivation 21b; and

(b) performing derivation 21a or 21c or 21d.

20. A method for making a modified plasmid encoding a modified fusion protein, the method comprising:

(a) providing a base plasmid selected from the group consisting of pWKK-500 and derivatives thereof, pWKK-700 and derivatives thereof, pWKK-800 and derivatives thereof, pWKK-900 and derivatives thereof, and pWKK-21 and derivatives thereof, the base plasmid comprising a plurality of DNA segments that encode a base fusion protein, wherein the base fusion protein comprises functional elements comprising a targeting moiety, a polypeptide toxin, and optionally one or more peptides selected from the group consisting of maltose binding protein, Factor Xa site, myristylation signal, flexible linker, protease-cleavable linker, L domain

motif, KDEL ER retention signal, hydrophilic linker comprising out-of-frame buforin II, *lacZα* peptide, and polyhistidine tag, wherein each of the plurality of DNA segments is flanked by unique restriction endonuclease sites, and

digesting the base plasmid with restriction endonucleases corresponding to selected unique restriction endonuclease sites such that one of the plurality of DNA segments is removed from the base plasmid; and

(b) ligating a replacement DNA segment to the base plasmid from which one of the plurality of DNA segments is removed, wherein the replacement DNA segment encodes a replacement functional element that replaces one of the functional elements of the base fusion protein, thereby resulting in a modified plasmid encoding a modified fusion protein.

21. The method of claim 20 wherein the replacement DNA segment encodes a targeting moiety.

22. The method of claim 20 wherein the replacement DNA segment encodes a polypeptide toxin.

23. The method of claim 20 wherein the replacement DNA segment encodes a protease-cleavable linker.